6.0 QUALITY CONTROL PLAN

6.1 INTRODUCTION

6.1.1 Purpose

The purpose of this QC Plan is to document the roles, responsibilities, and procedures that will be used to ensure quality throughout the OE remediation of the Project Site. It is based on the USACE DID for a QC Plan (DID OE-005-11).

6.1.2 Scope

This plan includes a designated QA/QC organization with the authority to enforce all provisions. The plan governs all operations, both on and off site, associated with this OE remedial action. It covers audit procedures, nonconformance corrective action procedures, data management, anomaly acquisition and reacquisition, field operations, equipment calibration maintenance requirements, and pass-fail criteria for audits and records. The QC Plan is designed to follow the sequence of field operations.

6.2 QUALITY ASSURANCE/QUALITY CONTROL ROLES AND RESPONSIBILITIES

6.2.1 California Environmental Protection Agency, Department of Toxic Substances Control

DTSC is the lead regulatory agency for the project. As such, they are responsible for the final review and approval of this QC Plan.

6.2.2 U.S. Army Corps of Engineers

USACE will provide technical oversight of the project, including:

- Review this OE RDD and the ESS (Appendix C).
- Provide a site geophysicist to review all aspects of the geophysical mapping, data processing, and anomaly reacquisition.
- Provide a Site Safety Specialist to observe all field operations. The Site Safety Specialist will ensure that the remediation contractor establishes the appropriate daily safety routines as specified in this OE RDD and the OE SSHP (Appendix F).

6.2.3 Granite Management Corporation

Granite is responsible for coordinating with DTSC and USACE on the project approach and technical issues. Granite's Project Coordinator will ensure all parties are kept informed of QC issues and progress of operations.

6.2.4 Quality Assurance Contractor

The QA Contractor will be responsible for oversight of all OE operations for field activities to be implemented by the Remediation Contractor. The QA Contractor will check conformance to this QC plan by performing audits, surveillance, document reviews, and QA functions. The QA Contractor will report to Granite's Project Coordinator and has the authority to require corrective actions and stop work, as needed, to ensure compliance with the Remediation Contractor's QC Plan.

6.2.5 Remediation Contractor

The remediation contractor will be responsible for implementation of this QC Plan. Key QC positions are listed below:

- QC Manager
- OE Safety Manager
- SSO
- Project Engineer
- Project Manager
- Geophysical Technical Manager (GTM)
- Field Investigation QC Staff.

An organization chart showing the lines of authority for implementation of a three-phase control system for monitoring QC activities is shown in Figure 6-1.

These key QC personnel will not be replaced without the concurrence of DTSC. The QCManager will provide the names, qualifications, duties, and responsibilities of each proposed replacement to DTSC, USACE, and Granite.

6.2.4.1 Personnel Responsibilities and Authorities.

The responsibilities, duties, and authorities of key QC personnel are discussed in the following sections. Rèsumès of the Earth Tech staff personnel proposed for the positions if Earth Tech serves as the remediation contractor are provided in Appendix L.

Quality Control Manager

The QC Manager will be principally responsible for oversight of all OE operations for field activities to be implemented by the SUXOS and for

implementing this plan. The QC manager will have knowledge of all requirements mandated by OSHA, USACE, U.S. EPA, Title 8 CCR, and the Remediation Contractor's Corporate Health and Safety Program. The QC Manager will hold a college degree in engineering, geology, or related field. The QC Manager will have a minimum of 10 years of experience in managing or auditing environmental field activities. The QC Manager, or designee, performs audits, surveillance, document reviews, and QC functions as required to determine the continued effectiveness of the QC Plan. The QC Manager will, as necessary, audit compliance with the QC Plan and perform OE safety reviews of selected project tasks. The QC Manager has the authority to require corrective actions and to stop work, as needed, to ensure compliance with this plan.

Ordnance and Explosives Safety Manager (OESM)

The OESM will be principally responsible for oversight of all OE operations for field activities to be implemented by the SUXOS. The OESM will have knowledge of all requirements mandated by OSHA, USACE, U.S. EPA, Title 8 CCR, and the remediation contractor's Corporate Health and Safety Program. The OESM will be a United States citizen and a graduate of either the U.S. Army Bomb Disposal School or the U.S. Naval Explosive Ordnance Disposal School. The OESM will have at least 15 years of UXO experience, which may be a combination of active-duty military EOD and contractor UXO experience, including 10 years in supervisory positions. The OESM will be directly responsible to the Project Manager.

The OESM, or his/her designee, will interface with the OE staff, the SUXOS, and the SSO on OE safety functions of the project and will coordinate activities with the Project Manager. In addition, they will, as necessary, perform audits, surveillance, document reviews, and other OE safety functions as required to determine the continued effectiveness of the OE SSHP. The OESM will, as necessary, audit compliance with the OE SSHP, and will perform OE safety reviews of selected project tasks. Other responsibilities will include, but not be limited to:

- Performing and documenting regular and frequent OE site hazard inspections and observing employees at work

- Stopping work when necessary to prevent injury or illness associated with OE and to ensure human and environmental health and safety

- Investigating all injuries and illnesses resulting from OE-related incidents
- Performing random health and safety assessments in the field, implementing corrective measures for site-specific health and safety deficiencies, and verifying resolution of any resulting corrective actions

- Overseeing the SUXOS, who will be responsible for all OE operations to be implemented. The SUXOS will report directly to the Project Manager.

Site Safety Officer

The SSO is responsible for implementation of the OE SSHP and will provide overall direction of the health and safety function for field activities. The SSO will have knowledge of all requirements mandated by OSHA, USACE, U.S. EPA, Title 8 CCR, and the Remediation Contractor's Corporate Health and Safety Program. The SSO will be a graduate of either the U.S. Army Bomb Disposal School or the U.S. Naval Explosive Ordnance Disposal School. The SSO will have documented site safety experience and a minimum of 10 years of experience in ordnance remediation or disposal operations. The SSO will perform audits, surveillances, document reviews, and other health and safety functions as required to determine the continued effectiveness of the OE SSHP. Other responsibilities include, but are not limited to:

- Ensuring regulatory and operational compliance with OSHA requirements, the OE SSHP, and the remediation contractor's corporate health and safety requirements.

- Reviewing health and safety training and medical monitoring.

- Monitoring the labeling, shipping, and control of hazardous or potentially hazardous samples and materials, and briefing all field personnel concerning health and safety requirements.

The SSO has the authority to require corrective actions and to stop work, as needed, to ensure compliance with the OE SSHP.

Project Engineer

The Project Engineer, who is responsible for the overall direction, coordination, technical consistency, and review of the OE RDD, will monitor the performance of all project staff through the Project Manager.

The Project Engineer will have the authority to select or dismiss staff, select or terminate major remediation contractors and subcontractors, approve or disapprove budgets and schedules, stop work, and communicate with the Granite Project Coordinator, as necessary, to evaluate the progress on any task and ensure the early resolution of any problem.

The Project Engineer may delegate authority to appropriate personnel to ensure activities are conducted in a compliant, cost-effective, and timely manner. However, responsibility for the project will remain with the Project Engineer.

Project Manager

The Project Manager, who will report directly to the Project Engineer, will be fully responsible and accountable for all project activities and will serve as the focal point and main channel of communication between the Granite Project Coordinator and the Project Team regarding technical and scheduling matters. The Project Manager will be responsible for:

- Reviewing and approving sampling, testing, and field investigation methods and QC Plan, including designs, schedules, and labor allocations

- Reporting any significant conditions adverse to quality and obtaining concurrence by the Granite Project Coordinator on proposed resolutions

- Reviewing QA audit reports and any resulting corrective action disposition.

Geophysical Technical Manager

The GTM will be responsible for oversight and direction of all geophysical activities for the investigation.

The GTM will interface with the Granite Project Coordinator and regulatory agencies regarding the quality of the geophysical data collected. The GTM will also track all QA/QC results of the geophysical survey on a spreadsheet that will tabulate the survey area identified, coordinates, and date surveyed. A QA summary will be prepared and submitted to the proponent's Project Coordinators, DTSC, and Project Manager.

The GTM has the authority to require corrective actions and to stop work, as needed, to ensure compliance with the remedial design.

Field Investigation QC Staff

The Field Investigation QC staff will be maintained under the direction of the QC Manager (or designee) during all phases of the remediation work. The Field Investigation QC staff will have knowledge of all requirements mandated by OSHA, USACE, U.S. EPA, Title 8 CCR, and the Remediation Contractor's Corporate Health and Safety Program. In addition, each Field Investigation QC staff member will have a minimum of 5 years of experience in performing environmental field activities related to the specific discipline for which they are assigned field investigation QC responsibility (i.e., UXO Technician, geophysicist). Field Investigation QC staff members will be responsible for implementation of the QC Plan. Field Investigation QC staff are responsible for:

- QC of sampling, testing, field investigation, and remediation activities

- Ensuring that OE remediation activities conform to this QC Plan, including enforcement up to and including work stoppage

- Evaluating the job performance of field crews. This work will be completed daily by the Field Investigation QC staff at the job site. The Field Investigation QC staff will review the markups daily to ensure they are complete and correct.

The Field Investigation QC staff members have the authority to require corrective actions and to stop work, as needed, to ensure compliance with the QC Plan.

6.3 DEFINABLE FEATURES OF WORK AND PHASE MEETINGS

6.3.1 Definable Features of Work

The definable features of work (DFW) for this project include site preparation (vegetation removal, removal and disposal of construction debris, removal and disposal of interior fencing), surveying and marking of grids, surface clearance, detection and mapping, intrusive investigation, disposal of OE and OE scrap, remediation of TNT-affected soils, areawide clearance, grading, and site restoration.

6.3.2 Phases of Control

For each of the DFW, field QC will be ensured through four audit phases: (1) readiness review (preparatory phase), (2) the initial phase, (3) the follow-on phase, and (4) the final phase. The QA/QC Manager will be responsible for performance of the QC phases as follows:

6.3.2.1 Readiness Review (preparatory phase).

This phase will be performed prior to mobilization to the site and will include:

- A review of guidance documents

- A review to verify that all equipment has been tested and calibrated

- A check to ensure that provisions have been made to provide required control inspection and testing
- An examination of the work area to ensure that all required preliminary work has been completed

- A physical examination of required equipment and sample work to ensure that they are on hand, conform to approved or submitted data, and are properly stored

- A review of the OE SSHP to ensure safety requirements are met

- A discussion of procedures for performing the work, including repetitive deficiencies, documentation of OE operation procedures, and standards for that phase of work

- A check to ensure that all pertinent documents have been accepted by DTSC

- A check to ensure that all required permits have been obtained and are posted at the job site, as necessary

- A check that all required health and safety equipment and supplies, field notebooks, data sheets, and other activity documentation record forms are available

- A review to ensure that all procurement documents (for materials, equipment, and subcontractors) are in order

- A check to ensure that all procedures and facilities for handling, holding, or disposing of OE and OE-related scrap are in place

- A review of all emergency procedures

- An assessment of anticipated weather conditions and potential affects it may have on production/quality

- The readiness review will be documented on the preparatory-phase checklist and signed by the Project Manager and the QC Manager.

6.3.2.2 Initial Phase.

This phase will be accomplished in the field at the beginning of definable work and will include:

- A verification of work plan compliance, including required control inspection and testing

- Establishment of level of workmanship and verification to meet minimum acceptable workmanship standards
- Resolution of all differences

- Safety check to include compliance with and upgrading of the OE SSHP; review of the OE SSHP with each worker.

The initial phase will be repeated for each new crew to work on site, or whenever acceptable specified quality standards are not being met.

6.3.2.3 Daily Inspection (follow-up phase).

The QC Manager or designee will perform daily inspections/surveillances of job site activities. Appropriate technical assistance will be provided to perform the inspections/surveillances as necessary for the specific field activities being performed. The inspections/surveillances will include, but not be limited to, the following:

- Examination of the quality of workmanship
- Compliance with required submittals
- Verification that all required equipment calibration has been performed and that inspection and standardization results comply with this OE RDD
- Check for defective, damaged, or out-of-calibration equipment
- Verification, inspection, and documentation of delivery, and storage of material and equipment to the site
- Performance of follow-up checks and correction of all deficiencies prior to the start of additional features of work that may be affected by the deficient work
- Documentation of the daily inspections of field activities on Daily QC Report Form (Appendix H).

6.3.2.4 Final Inspection.

The QC Manager will conduct a complete inspection of the work and develop a list of any items that do not conform to the OE RDD at the completion of each DFW. This list will be included in the QC documentation and will identify the projected date the deficiencies will be corrected. The Project Manager and the QC Manager will make a second completion inspection to ascertain that all deficiencies have been corrected and notify the DTSC, USACE, and Granite of their findings. The completion inspection and any required deficiency corrections will be accomplished within the time specified for completion of the work.

6.3.2.5 Control Documentation.

All inspection/surveillance documentation will be maintained in the project files and will include:

- All equipment standardization results and equipment maintenance results

- Preparatory-phase checklist

- QC-related meeting minutes

- All audit documentation and nonconformance and corrective action documents

- Corrective action acceptance documentation

- Daily QC Report Forms detailing the following information:

    - Remediation contractor/subcontractor personnel and their area of responsibility (trades)

    - Weather conditions

    - Work performed each day including location, description, and worker(s)

    - Test and/or control activities performed with results and references to the OE RDD requirements; deficiencies should be noted along with the corrective action

    - Quantity of materials received at the site with statement as to acceptability and storage

    - Job safety evaluations stating what was checked, results, and instructions or corrective actions.

The Daily QC Report will be the primary document, with all other applicable reports attached to it. The Daily QC Reports will be kept on site. All calendar days will be accounted for throughout the length of the field effort. Reports will be signed and dated by the QC Manager. The report from the QC Manager will include copies of reports prepared by QC staff. Copies of daily QC Reports will be provided to the USACE Site Safety Specialist.

6.4 INITIAL AND FOLLOW-UP FEATURES OF WORK

The Initial Phase consists of a review of the work practices and procedures and must be accomplished at the commencement of the DFW field activity.

The Follow-Up Phase is the continued inspection of practices and procedures for the remainder of site activities for that DFW. Daily checks will be performed

to ensure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work.

6.5 AUDITS

6.5.1 Purpose

The purpose of this procedure is to establish methods of planning, conducting, and documenting a formal and comprehensive audit program to verify implementation of the QC Plan.

An audit is an examination and evaluation performed to determine whether applicable elements of the site-specific QC Plan have been performed, documented, and effectively implemented in accordance with specified requirements.

6.5.2 Scope

This procedure applies to all audits performed on remediation contractor or subcontractor personnel activities affecting quality for the Tourtelot Remediation Project.

6.5.3 Responsibilities

The QC Manager is responsible for:

- Implementing and conducting an audit program of the remediation contractor and subcontractors' activities in accordance with the requirements of this procedure
- Reporting quality deficiencies to management
- Reviewing and evaluating audit reports to determine if quality deficiency trends are developing
- Evaluating the implementation and effectiveness of the QC Plan on a regular basis.

The Project Manager is responsible for:

- Reviewing audit results
- Attending pre-audit and post-audit meetings
- Implementing corrective action in response to Quality Deficiency Notices (QDNs)

- Responding to QDNs within 30 days, or as stipulated in the audit report.

The remediation contractor's consultants, outside laboratories, and/or subcontractors are responsible for:

- Reviewing the remediation contractor's audit reports, including any QDNs
- Implementing corrective action, as required
- Replying to QDNs within 30 days of receipt, or as stipulated in the audit report.

6.5.4 Procedure

6.5.4.1 Objectives.

Audit objectives are as follows:

- To verify that the QC Plan is being implemented by evaluating objective evidence
- To assess the adequacy, effectiveness, and thoroughness of the QC Plan
- To verify conformance with approved procedures, work plans, and drawings and specifications
- To identify quality deficiencies
- To verify correction of previously identified quality deficiencies.

6.5.4.2 Scheduling Requirements.

The QC Manager will audit program and project-related activities at least once during the field effort. The QC Manager will perform audits of consultants, outside laboratories, and subcontractors. Reauditing to verify implementation and satisfactory completion of recommended corrective actions will be performed, as deemed necessary.

6.5.4.3 Scheduling of Audits.

The QC Manager will prepare a tentative schedule of audits in a manner that provides effective coverage and coordination with ongoing program activities.

The audit schedule will be periodically reviewed and revised, as necessary, to ensure that coverage is maintained.

6.5.4.4 Unscheduled Audits.

Unscheduled audits will be performed if any of the following occurs:

- Significant changes are made in functional areas of the QC Plan, such as significant reorganization or procedure revisions
- There is evidence of a serious breakdown in the implementation of the QC Plan
- A systematic, independent assessment of program effectiveness is necessary
- It is necessary to verify implementation of recommended corrective actions.

6.5.4.5 Implementation.

Individual audits will be performed by audit personnel in conformance with the following procedures:

Preparation

Written Plan. An individual audit plan will be developed and documented. This plan will identify the audit purpose and scope, activities to be audited, applicable documents, and schedule of the audits. A checklist will be filled out for all audits to verify conformance.

Notification. Involved organizations will be notified of a scheduled audit within a reasonable time before it is to be performed (usually 2 to 4 weeks ahead of time). This notification may be in writing and should include the scope of the audit. Unannounced audits may be performed as required (Section 6.5.4.4).

Performance

Pre-audit Discussion. A brief conference will be conducted at the Project Site with cognizant organization/project management. The purpose of the conference will be to confirm the scope, present the audit plan, introduce auditors, meet counterparts, discuss audit sequence, and establish channels of communication.

Audit

- Checklists will be used to maintain the depth and continuity of audits

- Objective evidence will be examined for compliance with applicable requirements

- If a quality deficiency is found during an audit, the auditor will complete the QDN.

Post-audit Conference. At the conclusion of the audit, a conference will be held with the management of the audited organization/project. If any quality deficiencies have been noted during the audit, the responsible management will be advised of the deficiency in sufficient detail to ensure that the problem is clearly understood.

6.5.4.6 Report.

An audit report will be prepared and signed by the QC Manager and will include the following information:

- Audit number

- Audit scope

- Audit date

- Auditor identification

- Controlling documents

- Personnel contacted

- Audit result summary, including an evaluation statement of elements audited

- Identification of any QDNs*.*

The report, with attached QDNs, will be distributed to the responsible management. The formal audit report will be distributed within 30 days (preferably within 2 weeks) of the audit.

The QC Manager will log the performed audits on the Audit Status Form (Appendix H, along with the number of QDNs, and track the responses, or close the audit if no QDNs were issued.

6.5.4.7 Follow-Up

By Audited Organization

The management of the audit organization will review the audit report and any QDNs. If a QDN has been issued, the management of the audited organization will determine and schedule the appropriate corrective action, including action to prevent recurrence. The audited organization will describe the corrective action taken on the QDN and submit the notice to the auditor within the designated time frame, which should not be more than 30 days after receipt of the audit report.

By Auditor

The QC Manager will:

- Verify that the audited organization completes the appropriate sections of the QDNs and submits the form within the designated time.
- Review the response and determine whether the response is satisfactory.
- Evaluate evidence of completion of corrective action to determine whether the action taken is satisfactory.
- Request an additional response if the response and/or corrective action is unsatisfactory.
- Close the QDN, if the response and/or corrective action is satisfactory. Annotate on the Audit Status form.
- Complete the Audit Closure blocks.

6.5.4.8 General Requirements for Auditors.

Personnel selected for QC auditing assignments by the QC Manager will have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Personnel selected for QC auditing assignments will have, or be given, appropriate training or orientation to develop their competence to perform required audits. The QC Manager will determine auditor qualifications and the type of additional audit training required of auditors.

Lead auditors will have the experience or training necessary to ensure their competence in auditing skills, including:

- Knowledge and understanding of the standards and regulations applicable to field projects

- General structure of field investigation QC and applicable elements

- Auditing techniques of examining, questioning, evaluating, and reporting; methods for identification and follow-up of corrective action items, and close-out of quality deficiencies

- Audit planning in quality-related functions

- On-the-job training to include applicable elements of the audit program.

6.5.5 Records

Records pertaining to audits will include:

- Forms
- Audit Plans (notification and checklist)
- Audit Reports.

6.6 NONCONFORMANCE CORRECTIVE ACTION

6.6.1 Purpose

The purpose of this section is to:

- Verify that conditions adverse to quality (nonconformances) are identified and reported to appropriate management levels in an expedient manner.

- Verify that nonconforming items (e.g., test data, analyses) are appropriately marked and/or segregated and not used until corrective action has been completed.

- Verify that appropriate corrective actions or dispositions (accept, reject, repairs, or rework) have been recommended, approved, and implemented.

- Provide a system for the review and analysis of significant conditions adverse to quality (significant nonconformance) to determine their causes and trends, and to verify that corrective actions will preclude recurrence.

6.6.2 Scope

This procedure will be implemented whenever a condition adverse to quality is identified.

6.6.3 Responsibility

All remediation contractor Project Team personnel will be responsible for identifying and reporting nonconformances.

The Project Manager is responsible for :

- Evaluating nonconformances to determine if the work should be stopped
- Proposing corrective action
- Implementing corrective action
- Evaluating nonconformance impact on prior work or on previously obtained data (if any), and notifying the Granite Project Coordinator.

The QC Manager is responsible for reviewing nonconformances to determine if trends adverse to quality are developing, and for proposing and implementing long-term corrective action to prevent recurrence of any identified material nonconformance and nonconformance trends.

6.6.4 Procedure

6.6.4.1 Identification and Reporting of Nonconformances.

A nonconformance exists if there is a deviation from or noncompliance with the QC Plan, approved procedures, OE RDD, or other project requirements. Nonconformances also include major errors in documented analysis, data or results, and deficiencies in documentation or any other aspect of the project that may materially affect quality. Personnel who identify a nonconformance will report the condition by:

- Completing Part A of the Nonconformance Report (NCR) (Appendix H)
- Requesting an NCR number from the QC Manager, who will enter the NCR into the log
- Distributing the NCR to the Project Manager and QC Manager**.**

6.6.4.2 Evaluation of Nonconformance Report.

The QC Manager and Project Manager will review the NCR to determine if:

- Ongoing work should be stopped. If work stoppage is required, procedures delineated in Section 6.6.4.5 will be followed.

- The nonconformance constitutes a condition materially adverse to quality. In such a case, they will determine the cause of the condition. Examples of conditions that may be materially adverse to quality are potentially material failure to implement the QC Plan, potentially material errors in data or analyses that had previously been approved, potentially material deviation from the approved OE RDD and other work plans, and conditions that may materially affect the schedule of the work. Nonconformances that may constitute conditions materially adverse to quality will be reported to the Project Manager per Section 6.6.4.1.

- The nonconformance has any impact on previously obtained data or potentially material reports. If there is an impact, the Project Manager will note the potentially material impact in the "Remarks" section of the NCR, and notify the Granite Project Coordinator.

The evaluation will be documented through completion of Part B of the NCR.

6.6.4.3 Recommendation of Corrective Action or Disposition.

Persons determining corrective action or disposition will have demonstrated competence, an adequate understanding of the requirement, and access to pertinent background information. The QC Manager will recommend corrective action or disposition to resolve the nonconformance by completing Part C of the NCR.

6.6.4.4 Corrective Action Implementation and Verification.

The approved corrective action or disposition will be implemented by appropriate personnel. When completed, Part D of the NCR will be signed and dated by personnel performing the corrective action.

Corrective action, disposition implementation, and NCR closeout will be reviewed and approved by the Project Manager and the QC Manager.

The identification, cause, and corrective action for a nonconformance, which is a condition materially adverse to quality, will be reported to the QC Manager.

The completed NCR will be given to the QC Manager for logging into the NCR Log and filing in the QC records.

6.6.4.5 Work Stoppage.

If it is determined that work will be stopped, it will be noted in Part B of the NCR; the conditions necessary for work to resume will be noted in the Remarks section of Part B of the NCR.

The QC Manager will direct project personnel to stop all affected work. Work will not be restarted until the conditions required to restart work have been satisfied and written approval has been received from the QC Manager.

All work stoppages will be reported to the Project Manager, DTSC, USACE, and Granite Project Coordinator per Section 6.6.4.6.

6.6.4.6 Notification of Granite Project Coordinator.

If client notification is required, the Project Manager will submit a written report of the nonconformance to the Granite Project Coordinator. The Granite Project Coordinator will notify DTSC and USACE. The Project Manager will obtain concurrence from the Granite Project Coordinator for the proposed corrective action or disposition.

6.6.4.7 Tracking of Nonconformance Reports.

The QC Manager will monitor nonconformance reports to determine if trends adverse to quality are developing. If such trends are developing (e.g., repetitive NCRs-related to a particular activity, organization), the QC Manager will issue a written report identifying the problem to the Project Manager.

The Project Manager will evaluate the identified problem, propose, and implement a written corrective action program to prevent recurrence of the nonconformance.

6.6.5 Records

Records pertaining to Nonconformance/Corrective Action will include:

- NCR
- NCR Log
- Documentation of Notification to the Project Manager of Nonconformance
- Evaluation of NCR Trends

- Corrective Action Report for NCR Trends.

6.7 DATA MANAGEMENT

Data management guidance describing how project data and information will be collected, evaluated, and maintained is contained in Chapter 3.0 and Appendix H. The Data Management Plan designates responsibility for data and record management and details procedures and requirements for organizing, filing, storing, and controlling project data and records. All data and records will be maintained and preserved in the project files for final delivery/disposition, as directed by Granite, USACE, and DTSC. All QC records and documentation will be kept on site and made available for USACE and DTSC inspection.

6.8 FIELD OPERATIONS

Inspection and surveillance will be performed by the remediation contractor to maintain controls over all field activities identified in this OE RDD. The QC audit process for the OE remediation activities is shown on Figure 6-2. These controls will ensure that all personnel are qualified for the jobs they are performing and are using approved procedures and equipment. Controls will also ensure that specified process parameters and environmental conditions are maintained as required by this OE RDD. The pass/fail criteria for OE surface and subsurface clearance is specified in Figure 6-2.

6.8.1 Control Duties and Responsibilities

The QC Manager designee will conduct all phases of control and will be on site during all field activities. If the QC Manager alone cannot conduct an entire phase of control for a feature of work, or when multiple features of work may be concurrently ongoing, the QC Manager may be supported by qualified staff members.

6.8.2 Project Field Documentation

Field documentation is a permanent record of all activities associated with the site remediation project. All activities at the site will be recorded in the site Project Logbook(s). Field logbooks will be used to record specific information and activities related to collection, reduction, and/or interpretation of data (geophysical surveying or OE removal) in the field or Project Site.

Project field documentation will be maintained in accordance with the procedures discussed in Chapter 4.0.

6.9 PROJECT CONFORMANCE AUDIT SCHEDULE

The Project Conformance Audit Schedule (PCAS) (Appendix H) will be implemented at project start-up and will remain in effect throughout the life of the project. The PCAS will be used by the Field Investigative QC Staff as a working tool during all project audits/inspections and will be maintained in the project QC files.

The PCAS schedule will, at a minimum, provide the auditor/inspector with the schedule, checklist for audit/inspection area, reference for the check to be conducted, and a comment block to be filled in by the auditor/inspector for later documentation, used to generate QC Reports, QDNs, and NCRs, if required.

6.10 FIELD CHANGE CONTROL

6.10.1 Scope

The purpose of this section is to ensure that a thorough review of field changes is performed by qualified personnel.

6.10.2 Responsibilities

6.10.2.1 General.

Any individual, including the Project Manager, who is assigned to perform or supervise a task and recognizes the necessity for a field change, is responsible for developing the appropriate field change. They are required to complete and submit this field change request for review and approval.

6.10.2.2 Project Manager.

The Project Manager or a designated representative (e.g., QC Manager) is responsible for:

- Evaluating validity and acceptability of the field change request
- Evaluating and documenting the effect of the field change on the overall effort and schedule
- Accepting, qualifying, or rejecting the field change
- Soliciting and obtaining approval of any changes from the Granite Project Coordinator, who will interact with DTSC and USACE.

6.10.2.3 QC Manager.

The QC Manager is responsible for evaluating the changes to ensure that all QC requirements are met, that all changes to the OE RDD are properly reviewed and approved by the responsible personnel, and for keeping a log of the field change request forms.

6.10.3 Procedure

6.10.3.1 Recognition of Necessity for Field Changes.

During the course of field activities, the approved OE RDD technical procedures, and design documents will be followed. This document has been developed to cover all contingencies that may be encountered during the field activities. In the event that a situation arises that has not been addressed in the OE RDD Report, the team performing the task will determine the best approach toward satisfactory completion of the task. The team will inform the Project Manager or QC Manager of the situation, and the following actions will occur:

- If warranted, affected activities will be stopped until the Project Manager or QC Manager evaluates the situation.

- Field changes will be drafted for approval by DTSC.

6.10.3.2 Instigation of Field Changes and Definition of Minor and Major Changes and Major Project Impact.

Field changes and minor and major project impacts will be defined as follows:

- A Minor Change is defined as a field change that would not adversely affect the quality of the data or product, or the rationale for the field procedures. Examples of minor changes are as follows:

  - Changing the sequence of the field activities

  - Changing any of the administrative requirements relative to a remedial effort with the exception of those requirements mandated by federal or state regulations (e.g., chain-of-custody procedures).

- A Major Change is defined as a field change that may adversely affect the quality of field activities or a major change in the scope of the activity. Examples of major changes are as follows:

  - Significantly changing the area to be geophysically surveyed.

  - Significantly changing the methods used to detect OE.

- A change with Major Project Impact is defined as a change that has a major impact on the scope of the activity and/or technical performance. Some changes defined as major changes may have major project impact.

- Field changes will be documented by completing the Field Change Request Form (Appendix H) and describing the reasons for the change, the recommended disposition, cost impact, impact on previous work, and the type of change (Minor, Major, Major Project Impact). The signed and dated form will immediately be provided to the Project Manager and QC Manager for review.

Minor changes may be implemented prior to approval by the Project Manager and the QC Manager.

Major changes will require the approval of DTSC.

6.10.3.3 Project Review and Approval of Field Changes.

All field change requests will be routed to the Project Manager for review and approval.

The Project Manager will:

- Appraise the changes in technical performance

- Appraise the effect of the change on project level of effort and schedule

- Check the appropriate box for acceptance or rejection of the field change

- Sign and date the form

- Provide form to the Granite Project Coordinator for interaction with USACE and DTSC.

The QC Manager will:

- Appraise conformance to the OE RDD specifications and the QC Plan

- Check the appropriate block for acceptance or rejection

- Sign and date the form

- Assist the Project Manager in negotiation of the changes

- Give the field change request a consecutive number from the project Field Change Request Log and log the request.

6.10.3.4 Final Disposition.

After the review and approval process has been completed, the Field Change Request Form will be forwarded by the Project Manager to the personnel responsible for the work and the QC Manager, with the following action requested:

- If approved, the personnel responsible for the work will implement the change.

- The QC Manager will note final disposition of field change request (e.g., change incorporated and work completed, change rejected, and work performed per original requirements) on the Field Change Request Form and the Field Change Request Log.

- The QC Manager will verify that all changes to the OE RDD are marked on all copies in use in the field and on file.

- The completed Field Change Request Form will be submitted to the project file.

If an implemented minor field change is not approved, it will be deemed a nonconforming condition and, as such, will be treated by the procedures for Nonconformance/Corrective Action.

6.10.4 Records

Records pertaining to Field Change Control will include:

- Field Change Request Form
- Field Change Request Log.

6.11 PERSONNEL QUALIFICATION AND TRAINING PLAN

6.11.1 Qualifications of On-site Personnel

The Project Manager and QC Manager will ensure that all personnel meet the qualification requirements to perform the duties of the job to which they were assigned. All OE Safety Specialists and UXO contractor personnel must meet minimum standards for education and experience as detailed in USACE EP 11101-18.

6.11.2 Site-Specific Training

As part of the mobilization process, the remediation contractor will perform site-specific OE training for all personnel assigned to this project. The purpose of the training is to ensure that all personnel fully understand the procedures and methods that will be used to perform operations at the Project Site, their individual duties and responsibilities, and all safety and environmental practices/procedures associated with the operations. All personnel will be trained as they arrive and will not be allowed onto the Project Site until they have received site-specific training. Training topics/issues and responsibilities are as follows:

- The OE Supervisors and Specialists will receive operations briefings and training on their duties and responsibilities. All project personnel will receive ordnance recognition and OE safety precautions briefings. The SUXOS or SSO will perform this training.

- All personnel will receive additional training on the individual equipment they will operate on site.

All OE personnel will receive detailed training on the OE RDD and the OE SSHP. All training activities will be documented utilizing appropriate forms (e.g., training and field logbooks).

Prior to mobilization, all project personnel will receive HAZWOPER 40-hour/ 24-hour (or 8-hour refresher) training, as required. Additionally, all on-site personnel must be participating in a medical surveillance program and must have completed a pre-placement or annual physical examination that complies with the requirements of 29 CFR Part 1910.120. Project personnel must have been certified as fit to work by an Occupational Physician certified in Occupational Medicine by the American Board of Preventive Medicine, or one who is board-eligible. Documentation of the medical personnel will be filed on site.

6.11.3 Safety Training/Briefings

All on-site Project Team personnel will routinely participate in two types of safety briefings: a daily general briefing and a daily tailgate safety briefing**.** Additionally, the SUXOS may hold a safety stand**-**down when any degradation of OE safety is noted.

Daily General Briefing

The daily general briefing will be conducted for all on-site Project Team personnel at the Command Post prior to beginning work. The briefing will cover general hazards for the project and any new safety issues or hazards that have

been identified since the last briefing. The Project Manager will conduct the briefing, with input from the SUXOS and SSO.

Daily Tailgate Briefing

The SUXOS and SSO will conduct daily tailgate safety briefings focusing on the specific hazards anticipated for each work site during that day's operation, as well as the safety measures that will be used to eliminate or mitigate those hazards. It will also refer to other ongoing operations within the area whose proximity may have safety ramifications. As work progresses and the teams' locations change from grid to grid, this tailgate briefing will be used to review any corresponding changes in ingress/egress and emergency evacuation routes. Written records of these briefings and the signatures of personnel attending the briefings will be maintained.

6.11.4 Visitor Safety Briefings

Site visitors must receive a safety briefing prior to entering the operating area and must be escorted at all times by an OE-qualified individual. All visitors entering the project area must first sign in at the Command Post.

6.12 SITE ACCESS CONTROL

The remediation contractor will control access into operating areas and will limit access to those personnel necessary to accomplish the specific operations, or to those with a specific purpose and authorization to be on site. No hazardous operations will be conducted when unauthorized personnel are in the vicinity of the investigation and clearance areas. If at any time an unauthorized person is sighted within the defined MSA, operations will be immediately halted. Operations will not resume until the person has been safely escorted from the area. Site security personnel will perform perimeter inspections daily to ensure fencing remains intact.